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Wide-field optical monitoring with Mini-MegaTORTORA (MMT-9) multichannel high temporal resolution telescope

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Abstract

© 2017, Pleiades Publishing, Ltd.We describe the properties of Mini-MegaTORTORA (MMT-9) nine-channel wide-field optical sky monitoring system with subsecond temporal resolution. This instrument can observe sky areas as large as 900 deg2, perform photometry in three filters close to Johnson BV R system and polarimetry of selected objects or areas with 100–300 deg2 sizes. The limiting magnitude of the system is up to V = 11m for 0.1 s temporal resolution, and reaches V = 15m in minute-long exposures. The system is equipped with a powerful computing facility and dedicated software pipeline allowing it to perform automatic detection, real-time classification, and investigation of transient events of different nature located both in the near-Earth space and at extragalactic distances. The objects routinely detected by MMT-9 include faint meteors and artificial Earth satellites.We discuss astronomical tasks that can be solved using MMT-9, and present the results of the first two years of its operation. In particular, we report the parameters of the optical flare detected on June 25, 2016, which accompanied the gamma-ray burst GRB160625B.

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Keywords

gamma-ray burst: individual: GRB 160625B, instrumentation: miscellaneous, techniques: photometric

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